

Appl. No. 09/297,774
Docket No. JA-179
Amdt. dated September 13, 2010
Reply to Office Action mailed on May 12, 2010
Customer No. 27752

AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows:

Please replace the paragraph beginning at page 1, lines 15-26 with the following amended paragraph:

“Infants and other incontinent individuals wear disposable absorbent articles such as diapers to receive and contain urine and other body exudates. Absorbent articles function both to contain the discharged materials and to isolate these materials from the body of the wearer and from the wearer's garments and bed clothing. Disposable absorbent articles having many different basic designs are known to the art. It is also known that the exterior of disposable diapers can be covered with a flexible, liquid and vapor impervious sheet, which ~~to~~ prevents any absorbed liquid from passing through the diaper and soiling adjacent articles such as clothing, bedding and the like. These outer covers, generally referred to as backsheets, are often constructed from fluid impervious films such as polyethylene. Although such backsheets do prevent liquid from passing through the diaper, they also can make the diaper feel hot and uncomfortable to wear because of their impermeability to air and/or moisture.”

Please replace the paragraph beginning at page 1, line 28 through page 2, line 2 with the following amended paragraph:

“Backsheets which are pervious to vapor are generally known as breathable backsheets and have been described in the art. In general, these backsheets are intended to allow the passage of vapor through them while retarding the passage of liquid. The conventional breathable backsheets are usually made of microporous thin plastic films. For example, U.S. Pat. No. 3,156,242 issued to Crowe, Jr. on November 10, 1964 teaches the use of a microporous film as a breathable backsheet. U.S. Pat. No. 3,881,489, issued to Hartwell on May 6, 1975, teaches a breathable backsheet comprising in combination two layers, ~~the~~ The first layer of which is a low void volume perforated thermoplastic film and the second layer of which is a porous high void volume hydrophobic tissue.”

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Please replace the paragraph beginning at page 2, lines 4-7 with the following amended paragraph:

"Some recent disposable diapers use cloth-like backsheets to provide a visual breathability and an improved natural ~~looking~~ appearance and/or impression. A typical structure of such cloth-like backsheets comprises a nonwoven web joined to the outer-facing surface of a microporous thin plastic in order to form a laminate."

Please replace the paragraph beginning at page 2, lines 9-14 with the following amended paragraph:

"However, such cloth-like backsheets ~~can not obtain enough~~ are not completely satisfactory to consumers' acceptance because they are either stiff, bulky or have a rough ~~on~~ the surface. For example, the friction between the backsheet and the wearer's skin often causes skin rashes on ~~at~~ the wearer's legs areas. Further, the friction between the backsheet and the wearer's clothes generates a noise and is also increases the uncomfortable to the ~~wearer's uncomfortableness~~. It is believed that such frictions are caused by high excessive crispness and roughness at the surface of backsheets."

Please replace the paragraph beginning at page 2, lines 18-28 with the following amended paragraph:

"Briefly stated, the present invention relates to a disposable absorbent article. In one aspect of the invention, the disposable absorbent article comprises a containment assembly comprising a topsheet, a backsheet and an absorbent core disposed between the topsheet and the backsheet. The backsheet comprises a nonwoven web positioned at the outermost portion of the absorbent article, for covering at least a portion of the outermost portion of the absorbent core of the article. The backsheet has a hand value of Koshi of less than about 11.0, a hand value of Shari of from about 5.0 to about 7.0, and a hand value of Fukurami of less than about 0.5. Preferably, the backsheet has a fuzz level of less than about 0.24 mg/cm². More preferably, the nonwoven web is a spunbonded nonwoven web. In a preferred embodiment, the spunbonded nonwoven web has a tensile strength of at least 180 gf/cm in the traverse direction of the disposable absorbent article."

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Please replace the paragraph beginning at page 2, line 30 through page 3, line 8 with the following amended paragraph:

“In another aspect of the invention, the disposable absorbent article comprises a containment assembly comprising a topsheet, a backsheet and an absorbent core disposed between the topsheet and the backsheet. The backsheet comprises a nonwoven web positioned at the outermost portion of the absorbent article, for covering at least a portion of the outermost portion of the absorbent core of the article. The nonwoven web is a spunbonded nonwoven web comprising spunbonded bi-component plastic fibers. Preferably, the spunbonded nonwoven web is placed in the disposable absorbent article so that the fiber direction of the spunbonded bi-component plastic fibers is aligned with the longitudinal direction of the disposable absorbent article. More preferably, the spunbonded nonwoven web has a tensile strength of at least 80 gf/cm in the traverse direction of the disposable absorbent article. In a preferred embodiment, the nonwoven web has a hand value of Koshi of less than about 16.0, a hand value of Shari of from about 0.5 to about 9.5, and a hand value of Fukurami of less than about 5.0. In a further preferred embodiment, the nonwoven web has a fuzz level of less than about 1.0 mg/cm².”

Please replace the paragraph beginning at page 3, line 26 through page 4, line 26 with the following amended paragraph:

“Fig. 2 is an enlarged, cross-sectional view of one embodiment of a disposable absorbent article comprising a backsheet[.];

Fig. 3 is a plane view of the sample used for the tensile property measurement[.];

Fig. 4 is a graph showing the tensile property of the sample[.];

Figs. 5A and 5B are schematic diagrams explaining the measurement for the bending property[.];

Fig. 6 is a graph showing the bending property of the sample[.];

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Fig. 7A and 7B are schematic diagrams explaining the measurement for the surface roughness[.];

Fig. 8A and 8B are schematic diagrams explaining the measurement for the surface friction[.];

Fig. 9 shows the conditions of the steel plate used for the surface roughness and friction measurements[.];

Fig. 10 shows the changes of the friction coefficient along the surface of the sample[.];

Fig. 11 shows the changes of the thickness along the surface of the sample[.];

Fig. 12 is a plane view of the sample used for the shearing property measurement[.];

Fig. 13 is a graph showing the shearing property of the sample[.];

Fig. 14 is a plane view of the sample used for the compression property measurement[.];

Fig. 15 is a graph showing the compression property of the sample[.]; and

Fig. 16 is a schematic diagram explaining the fuzz level measurement.”

Please replace the paragraph beginning at page 5, lines 13-25 with the following amended paragraph:

“Figure 1 is a plane view of the diaper 20 in its flat-out, uncontracted state (i.e., with elastic induced contraction pulled out) with portions of the structure being cut-away to more

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clearly show the construction of the diaper 20 and with the portion of the diaper 20 which faces the wearer, the inner surface 40, facing the viewer. As shown in Figure 1, the diaper 20 preferably comprises a containment assembly 22 comprising a liquid pervious topsheet 24; a liquid impervious backsheet 26 joined to the topsheet; and an absorbent core 28 positioned between the topsheet 24 and the backsheet 26. The absorbent core 28 has a pair of opposing longitudinal edges 60, an inner surface and an outer surface. The diaper preferably further comprises side panels 30; elasticized leg cuffs 32 (each having an inboard edge 35 and an outboard edge 32); elasticized waistbands 34; and a fastening system 36 preferably comprising a pair of securement members 37 and a landing member 38. The backsheet 26 prevents the exudates absorbed and contained in the absorbent core 28 from wetting articles which contact the diaper 20 such as bed sheets and undergarments.”

Please replace the paragraph beginning at page 9, lines 17-33 with the following amended paragraph:

“The backsheet 26 of the present invention comprises a nonwoven web 90 positioned at the outermost portion of the absorbent article, which covers at least a portion of the outermost portion of the absorbent core of the article. In preferred embodiments, the nonwoven web 90 ~~covers~~ is present on at least 30%, more preferably at least 70%, most preferably at least 90% of the area of the ~~outermost portion~~ outer-facing surface of the absorbent article. In preferred embodiments, the backsheet 26 further comprises a plastic film 27 having an outer-facing surface and a body-facing surface, and the nonwoven web 90 is joined with the outer-facing surface of the plastic film to form a laminate. The nonwoven web may be joined to the plastic film by any suitable attachment means known in the art. For example, the nonwoven web may be secured to the plastic film by a uniform continuous layer of adhesive, a patterned layer of adhesive, or an array of separate lines, spirals, or spots of adhesive. Suitable adhesives include a hotmelt adhesive obtainable from Nitta Findley Co., Ltd., Osaka, Japan as H-2476-01, and a hotmelt adhesive obtainable from H.B. Fuller Japan Co., Ltd., Osaka, Japan as JM-6064. Preferably, the density of the adhesive applied between the nonwoven web and the plastic film is from about 0.05 g/m² to about 7.0 g/m²,

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more preferably from about 0.1 g/m² to about 5.0 g/m², most preferably from about 0.2 g/m² to about 1.5 g/m²."

Please replace the paragraph beginning at page 10, lines 16-24 with the following amended paragraph:

"Preferably, the nonwoven web 90 may cover all or substantially all of the outer-facing surface 70 of the plastic film 27, or may cover only discrete predetermined portions. In a preferred embodiment, the nonwoven web 90 covers all or substantially all of the plastic film 27 in order to provide the diaper with a cloth-like ~~look~~ appearance and feel. Further, the nonwoven web 90 may provide the diaper with a low cost landing zone capable of engaging the hooks of a hook and loop type fastener. (Such a landing zone could be utilized as a portion of a primary fastening system or as a means for disposing of a soiled diaper.)"

Please replace the paragraphs beginning at page 13, line 11 through page 13, line 35 with the following amended paragraph:

"The hand value of Koshi ~~shows~~approximates the feeling ~~related~~attributable to the bending stiffness of the backsheet. The springy property of the backsheet material promotes ~~enhances~~ this feeling. ~~The A~~ backsheet having a compact weaving density, ~~which is and~~ woven by with springy and elastic yarns ~~increases~~ enhances this feeling. The hand value of Shari ~~shows~~ approximates the feeling ~~come~~, which results from the crisp and rough surface of the backsheet. This feeling is ~~brought~~ caused by hard and strongly twisted yarns. ~~This feeling also provide a cool feeling.~~ The hand value of Fukurami ~~shows~~approximates the feeling ~~come~~, which results from the bulky, rich and well formed ~~feeling of the~~ backsheet. ~~The springy property in compression and thickness accompanied with warm feeling are closely related to this feeling. The hand value shows the degree of intensity in the respective feelings.~~

Thus, the backsheet of the present invention has suitable ranges of the hand values, which enhances ~~to provide an improved~~ surface smoothness and softness. For example, the backsheet of the invention reduces the frictions ~~caused~~ between the backsheet and the

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wearer's skin ~~so that it can~~ in order to prevent skin rashes at the wearer's legs areas. Further, the backsheet of the invention reduces frictions caused between the backsheet and the wearer's clothes ~~can be also reduced~~. Thus, the generation of noise can be prevented to improve the wearer's comfortableness.

In a preferred embodiment, the backsheet has a fuzz level of less than about 0.24 mg/cm², more preferably of less than about 0.14 mg/cm², and most preferably of less than about 0.05 mg/cm². The fuzz level ~~shows~~ approximates the an amount of untangled fibers, which protrude from the surface of the backsheet. ~~This gives the feeling that related to the skin-friendliness.~~ Higher fuzz level results in greater ~~increases more the feeling of~~ skin irritation as well as the a greater itching sensation to the skin-itchiness. The fuzz level relates to the quantity of untangled fibers which protrude from the surface of the backsheet. The fuzz level also ~~relates to the removability of the~~ corresponds to the propensity of untangled fibers to get removed from the surface of the backsheet.”

Please replace the paragraph beginning at page 14, lines 2-5 with the following amended paragraph:

“In more preferred embodiments, the backsheet has a mean value of coefficient of friction (MIU) of less than about 0.21, more preferably less than about 0.18. ~~The smaller~~ Lower values of MIU can reduce the result in lower frictions between the backsheet and the wearer's skin, and between the backsheet and the wearer's clothes.”

Please replace the paragraph beginning at page 16, lines 1-9 with the following amended paragraph:

“The sixteen characteristic values are obtained by the measurement and analytical methods described in the next section. Similar ~~(but not exactly the same although not identical)~~ measurement and analytical methods for fabric is ~~are~~ known and described, for example, in the Chapter IV of the text book, by Suet Kawabata, entitled "The Standardization and Analysis of Hand Evaluation (2nd. Edition)", published by the Textile

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Machinery Society of Japan, July 1980. The disclosure of this book is incorporated herein by reference. Based on the sixteen characteristic values obtained from the measurements, the hand values of Koshi, Shari and Fukurami are obtained according to the following analytical methods. The fuzz level is measured by the specific method described in the later section."

Please replace the paragraph beginning at page 16, line 31 through page 17, line 3 with the following amended paragraph:

"The deformation mode is ~~a pure~~ obtained by bending the sample between the a curvature $K = -2.5 \text{ cm}^{-1}$ and $K = 2.5 \text{ cm}^{-1}$. ~~It~~ The deformation mode is a measure of the force required to bend the sample. The effective dimension of the sample for the this measurement is ~~2.0~~ 2.0 cm in length and 1.0 cm in width (rectangular). The sample is bent as shown in Figs. 5A and 5B. The bending rate is $0.5 \text{ cm}^{-1}/\text{sec}$. As a result, ~~the a~~ bending hysteresis curve as shown in Fig. 6 is obtained ~~by the measurement~~. The horizontal axis shows the curvatures $K \text{ cm}^{-1}$ and the vertical axis shows the moment $M \text{ (gf}\cdot\text{cm/cm)}$. The values of B and 2HB are calculated as follows:"

Please replace the paragraphs beginning at page 17, lines 16-33 with the following amended paragraphs:

"To measure the surface roughness of the sample, a pianowire is prepared and bent as shown in Figs. 7A and 7B. 5.0 gf (allowance, $\pm 0.5 \text{ gf}$) of the contact force is applied by a spring ~~of which~~ having a spring constant is of $25 \pm 1 \text{ gf/mm}$. The natural frequency of the system should be more than 30 Hz when the contactor does not contact the sample is out of the contact.

The friction between the surfaces of the sample and a contactor is measured under a constant contact pressure. Surface friction should be measured by using the contactor shown in Fig. 8A and 8B. The surface of the contactor is covered by ten parallel and stacked piano steel wires. The ten pieces of the same wires are placed on the surface of specimen. ~~The A~~ A compressional force of 50 gf by dead weight is applied to the surface of the sample through the contactor.

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In the both of the roughness and friction measurements, the specimen is ~~moved between~~ displaced a distance of 2 cm interval by at a constant velocity of 0.1 cm/sec on a smooth steel plate placed horizontally where the tension of the specimen is kept at 5.0 gf/cm (force per unit length) and the contactor is kept its position. The dimension of the plate is shown in Fig. 9. ~~thus, the changes of the surface friction~~ The variations of the surface coefficient of friction μ and the sample thickness T that are obtained asare shown in Figs. 10 and 11."

Please replace the paragraph beginning at page 18, lines 24-35 with the following amended paragraphs:

"~~The~~ A constant extension force[[,]] of 5 gf/cm[[,]] ~~is applied to~~ on a longitudinal direction of the sample ~~uni-directional~~ and then ~~the~~ a shear force F_s is superposed inapplied to the sample plane along the transverse direction of the sample up to the shear angle $\phi=4^\circ$ as shown in Fig. 12. Then, the sample shear deformation is recovered by reducing the shear angle back to zero. The effective dimension of the sample is 20 cm in width and 5 cm in length. ~~Thus, the~~ The relationship between F_s and ϕ that is obtained as is shown in Fig. 13. The value of 2HG is obtained as from the hysteresis curve at $\phi=0^\circ$. The value of G is calculated as follows:

$$G = (G_f + G_b) / 2 \quad \text{---- (9)}$$

where G_f and G_b are the average slopes of the curve between $\phi = 0.5^\circ$ and 5° and between $\phi = -0.5^\circ$ and -5° respectively."

Please replace the paragraph beginning at page 19, lines 1-30 with the following amended paragraphs:

"~~The~~ For this test, the effective dimension of the sample is 2.5 cm long and 2.0 cm in width, ~~is used and the~~ The longitudinal direction of the sample is taken along either warp or weft direction. 2 cm² of a circled area of the sample is compressed by two circular-plates of steel having 2 cm² area (Fig. 14). The velocity of the compression is 20 micron/sec and when

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the pressure ~~attains at~~ reaches 10 g/cm², the recovery process is measured ~~by~~ at the same velocity. The values of LC, WC and RC are obtained by the following expressions:

$$LC = WC / WOC \quad \text{---- (10)}$$

$$WC = \int_{T_m}^{T_o} PdT \quad \text{---- (11)}$$

$$RC = WC' / WC \quad \text{---- (12)}$$

where

T ; Thickness of the sample (cm).

To ; Thickness of the sample at ~~maximum~~ a pressure of 0.5 gf/cm², (cm).

Tm ; Thickness of the sample at maximum pressure Pm which is :

$$P_m = 50 \text{ } 10 \text{ gf/cm}^2$$

$$WOC; = P_m (T_o - T_m) / 2 \quad \text{---- (13)}$$

WC' ; Recovering energy given by the pressure of the recovering process, P' such as

$$WC' = \int_{T_m}^{T_o} P' dT \quad \text{---- (14)''}$$

Please replace the paragraph beginning at page 20, lines 1-5 with the following amended paragraphs:

“(2) Calculation ~~for~~ of Hand Values

The hand values of Koshi, Shari and Fukurami are obtained from the following expression (15) by applying the sixteen characteristic values obtained from the measurements.

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The calculation using the expression (15) is conducted according to the Knit High Sensivity Condition (KN-403-KTV)."

Please replace the paragraph beginning at page 21, lines 13 through page 22, line 4 with the following amended paragraphs:

"(4) Fuzz Level Measurement

To measure the quantity of untangled fibers that protrude from the surface of the sample, the face of the sample 12 is rubbed against the face of sandpaper 14 for 29 seconds at 0.7 Hz to cut or ~~loose~~ loosen the untangled fibers 16. 18.1 gf/cm² of pressure is applied to the sample 12. An example of the equipment is shown in Fig. 16. The cut fibers produced by this action are collected by a removal tape and quantified with an analytical balance. The fuzz level is defined as the weight of the fibers collected per unit area (mg/cm²)."

Please replace the abstract with the following amended abstract:

"A disposable absorbent article ~~such as an absorbent diaper~~ comprises a containment assembly comprising a topsheet, a backsheet and an absorbent core disposed between the topsheet and the backsheet. The backsheet comprises a nonwoven web positioned at the outermost portion of the absorbent article, ~~for covering~~ The backsheet covers at least a portion of the outermost portion of the absorbent core of the article. ~~The backsheet has a hand value of Koshi of less than about 11.0, a hand value of Shari of from about 5.0 to about 7.0, and a hand value of Fukurami of less than about 0.5. Preferably, the backsheet has a fuzz level of less than about 0.24 mg/cm². More preferably, the~~ The backsheet includes a nonwoven web, which is a spunbonded nonwoven web. ~~In a preferred embodiment, the~~ The spunbonded nonwoven web has a tensile strength of at least 180 gf/cm in the traverse direction of the disposable absorbent article. ~~Preferably, the~~ The backsheet further comprises a plastic film having an outer-facing surface and a body-facing surface, and the nonwoven web is joined with the outer-facing surface of the plastic film to form a laminate. ~~In a~~

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~~preferred embodiment, the nonwoven web is made of spun bonded plastic fibers of a polyethylene and a polypropylene."~~

Please see a replacement (or new) abstract on the attached separate sheet